

ID-70/S

MANUAL

RFID Long Range Reader



ID Innovations
Advanced Digital Reader Technology

-----Better by Design

Manual Rev 08 – (31st March 2003)

PRODUCT DESCRIPTION

Introduction

The ID-70 is an advanced reader for the popular EM4001 format 125KHz tags. Read ranges of over 100 cm are possible with our Long Range Cards. Advanced features include auto-tuning and DSP capabilities to increase read range and to reduce unwanted vibration and interference. The ID-70MK3 also features RS232, Wiegand26, Wiegand34, Wiegand42, Magnetic ABA Track2 10digit and Magnetic ABA Track2 14digit output formats. Furthermore, the reader is encapsulated for environmental protection. The ID-70Mk3 has special anti-interference software and is particularly suitable for applications such as car parks where readers are required to operate close to each with little or no degradation in performance.

Features

- Very Long Read Range 100cm
- Through-wall and hands free applications
- Auto-Tuning
- Strong Water Resistant Enclosure
- Readers can operate 150cm apart - *New*
- Six Output Formats - *New*
- Large Beeper - *New*
- External antenna available for *D-70s (see attached introduction) *Optional*

***ID-70s is a special designed for the external antenna.**

Normally the ID-70 Antenna and Reader are put in one plastic case. The ID-70S is a new type of ID-70, in which the antenna is separated from the Reader.

The ID-70S package include:

- * 1 pcs Antenna (plastic case) same with ID-70 case.

- * 1 pcs Reader (metal box)
- * 3 pc Cable. 2 cables have plugs at both ends for connecting the Reader and antenna. 1 cable with a plug at one end and soldering leads at the other end. This is for the power supply and Reader output format programming).

Description

DSP (Digital Signal Processing) is used to provide superior range and reduce vibration and electrical noise effects. These effects are not eliminated so care should still be taken to position the equipment away from sources of electrical noise and vibration.

Temperature changes can affect accuracy of the antenna tuning. The ID-70 is equipped with a sophisticated self-tune facility or auto-tune. The reader performs an auto-tune shortly after power-up.

Installation

Position the ID-70 away from sources of interference such as main wiring. Do not fix the reader antenna on solid steel objects or range loss will occur and the auto-tuning may even run out of range. Moderate metal fixtures are acceptable. Computer monitors used in DOS mode can result in powerful interference especially when older monitors are used. Vibration can also cause loss of range.

If possible use a lamp regulated linear Power Supply. Switching regulators can sometimes produce powerful interference and reduce read-range.

SPECIFICATIONS

Table 1. ID-70 Operational & Physical Characteristics

Parameter	Conditions
Power Requirements	12V DC
Current Consumption	0.3 Amperes nominal
Frequency	125 KHz
Read Range	100 cm with our long range cards, 70cm with 'Unique' ISO cards
Interfaces	RS232 (9600, n, 8, 1) and Wiegand26/34

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Transponder	Read-only 64 bits, Manchester encoded
Auto-tune	Internal upon switch-on and every 10 minutes
Read Indication	LED and Beeper
Dimensions	230mm x 230mm x 35mm
Nominal Weight	1.2 Kg

DATA FORMATS

Output Data Structure – ASCII

STX (02h)	DATA (10 ASCII)	CHECK SUM (2 ASCII)	CR	LF	ETX (03h)
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[The 1byte (2 ASCII characters) Check sum is the arithmetic addition of the 5 hex bytes (10 ASCII) Data characters.]

Output Data Structure – Wiegand26 (P = Parity start bit and stop bit)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
P	E	E	E	E	E	E	E	E	E	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	P
Even parity (E)													Odd parity (O)												

Output Data Structure – Wiegand34 (P = Parity start bit and stop bit)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
P	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	P
Even parity (E)																	Odd parity (O)																

Output Data Magnetic ABA Track2 10Decimal Characters

10 Leading Zeros	SS	Data (10Ascii Char)	ES	LCR	10 Ending Zeros
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[SS is the Start Character of 11010, ES is the end character of 11111, LRC is the Longitudinal Redundancy Check.]

Output Data Magnetic ABA Track2 14Decimal Characters

10 Leading Zeros	SS	Data (14Ascii Char)	ES	LCR	10 Ending Zeros
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[SS is the Start Character of 11010, ES is the end character of 11111, LRC is the Longitudinal Redundancy Check.]

Report Format

Upon switch-on the reader sends a report via the RS232 line. The report indicates the Software Revision and the Tuning Variable. A typical report will be as follows (hex values):

Day	Month	Year	Revision #	Tune Variable	Arithmetic Checksum
01	01	01	08	04	1F

The Tune Variable indicates the Tuning Capacity. A figure between 01h-0Dh is OK. A figure outside this range can be caused by environmental demands, possibly due to fixing directly onto sheet steel.

Cable Signal Definitions

Wire color	Signal	Description
Red	PWR	+12V DC input
Black	GND	Ground
Yellow	Program1	Program line1 (format selector)

Violet	Program2	Program line2 (format selector)
Grey	-	Used to Select Magnetic Emulation
Green	Data 1	Weigand data 1, Magnetic ABA clock *
Brown	Data 0	Weigand data 0, Magnetic ABA data *
White	CP	Card Present
Blue	RS232	Serial RS232 output (9600, n, 8, 1)
Orange	-	Not Connected
Screen	GND	Earth Screen

* In Weigand Mode add 1.5k pull-up resistors for Data0 and Data1 signals. In Magnetic Mode add 1.5K pull-ups to Data, Clock and Card Present

Table 3. Output Format Programming

Output Format	Programming
RS232	Connect PRGM (Yellow wire) to RS232 (Blue wire)
Weigand26	Connect Yellow wire to Black wire : Connect Violet to Black wire
Weigand34	Connect Yellow wire Red wire
Weigand42	Connect Yellow wire to Black wire : Connect Violet to Red wire
Magnetic ABA Track2 10 digit	Connect Yellow wire to Grey wire : Connect Violet to Red wire
Magnetic ABA Track2 14 digit	Connect Yellow wire to Grey wire : Connect Violet to Back wire

Calculation of ASCII Check sum.

Suppose a card ID = 12, 34, 56, 78, 90 Adding in hex gives:-

12

34

56

78

90

A4

Thus $2+4+6+8 = 14$ (20 decimal). The 1 is carried. The **4** is the low sum.

and $1+3+5+7+9+ \text{carry}(+1) = 1A$ (26 decimal). The 1 is discarded. The **A** is

the high sum. This gives **A4**.

Specifications subject to change. ID Innovations reserves the right to change its products and the specifications given here at any time without notice.